



Title of Project: Recurvature Dynamics of a Typhoon
Grant No.: N00014-93-1-0243

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Progress Report:

This was a very productive year for our grant. We completed a major PhD dissertation on the TCM90 data sets. That was the PhD work of Jack Beven. This dissertation is an extension on the work of Russ Elsberry, Greg Holland and Hugh Willoughby. The topic of this work is on the baroclinic beta gyres as viewed from Super-typhoons Flo and Yancy of 1990. The major results of this study are that the typhoon motion is indeed affected by the baroclinic component of the beta gyres. The upper level circulations of these storms draws air from far distant regions away from the storm, and this descending air undergoes convergence and a cyclonic circulation gyre from over the descent. This is a part of the overall baroclinic component that affects the motion of the storm. Currently Jack Beven is employed at the National Hurricane Center.

We completed a major study on the landfall of the Bangladesh cyclone of 1991. This paper is submitted for publication. The following is the abstract of this study: This paper deals with high resolution numerical weather prediction experiments for the recent Bangladesh Tropical Cyclone (April 1991). This devastating storm resulted in well over 100,000 deaths. The results from global model experiments carried out at a horizontal resolution of 213 waves (triangular truncation) and from a regional model at a horizontal resolution of 46 km are presented. Recent improvements in the model's parameterization of cumulus convection, land surface parameterization (the specification of ground wetness), enhanced evaporation over low wind speed regions were included in the sensitivity studies reviewed here. The improvements were also contributed by two data sets, one a high resolution sea surface temperature over the

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February 22, 1994

Dr. Robert Abbey
Office of Naval Research
800 North Quincy Street
Arlington, Virginia 22217-5000

Dear Dr. Abbey,

Enclosed please find the our Annual Technical Report for our grant entitled "Recurvature Dynamics of a Typhoon", N00014-93-1-0243. Please feel free to contact me via phone 904-644-2210, fax 904-644-9642 or email TNK@cloud1.met.fsu.edu, if any further information is needed.

Thank you very much for your support of our research efforts here at FSU.

Sincerely,

T N Krishnamurti

T.N. Krishnamurti

TNK/sam

enclosure

cc: Administrative Grants Officer
Director, NRL
Defense Technical Information Center (2)
Office of Research, Florida State University

Arabian Sea and the other a satellite based surface wind estimate from microwave radiometer. These appear to provide strong positive impact during the storm's landfall history. Overall we demonstrate the results of successful landfall experiments with the high resolution global and regional models where we have incorporated the aforementioned improvements, i.e. in the data sets and in the physical parameterizations.

We are working very closely with the NRL group at Monterey on physical initialization. We are working with Dr. Andy Van Thuyt to implement the rainfall initialization from SSM/I on the NOGAPS global model at Monterey. We have a large involvement with this group presently.

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